SVM Multi-Classs Classification

Nipun Batra

IIT Gandhinagar

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SVM Multi-Classs Classification

1. One v/s All

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$$\left.\begin{array}{l}\text{Blue (+1) v/s All (-1) :} \overline{w}.\overline{x}_{test} + b = 0.8 \\ \text{Yellow (+1) v/s All (-1) :} \overline{w}.\overline{x}_{test} + b = 0.6 \\ \text{Red (+1) v/s All (-1) :} \overline{w}.\overline{x}_{test} + b = -0.2\end{array}\right\} \text{argmax = Blue}$$

SVM Multi-Classs Classification

1. One v/s One

SVM Multi-Classs Classification

1. One v/s One

Majority = Blue

SVM Multi-Classs Classification

1. One v/s One
    1. Blue v/s Yellow $\rightarrow$ Blue

Majority = Blue

SVM Multi-Classs Classification

1. One v/s One
    1. Blue v/s Yellow $\rightarrow$ Blue
    2. Yellow v/s Red $\rightarrow$ Red

Majority = Blue

SVM Multi-Classs Classification

1. One v/s One
    1. Blue v/s Yellow $\rightarrow$ Blue
    2. Yellow v/s Red $\rightarrow$ Red
    3. Red v/s Blue $\rightarrow$ Blue

Majority = Blue

Support Vector Regression

Hard Margin or ϵ-SVR
$\hat{y}(x) = \overline{w}.\overline{x} + b$